Questions and Answers

Varieties and Seeds

Department of Agriculture
PHILIPPINE RICE RESEARCH INSTITUTE
DA-PhilRice
## Q&A ON VARIETIES

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What is an inbred rice variety?

An inbred rice variety is the product of self-pollination or the transfer of pollen from the anther to the stigma of the same flower. Thus, only one rice plant is needed to produce its seeds. Seeds harvested from an inbred variety can still be used for the next planting season without much reduction in the quality and quantity of the yield, provided roguing was regularly done. All IR, PSB Rc, and traditional varieties are inbred, except PSB Rc26H, PSB Rc72H, and PSB Rc76H. Most of the rice varieties in farmers’ fields are inbred.

What is a hybrid rice variety?

A hybrid rice variety is the product of cross pollination or the transfer of pollen from the anther of one rice plant to the stigma of another rice plant. Thus, two rice plants are needed to produce its seeds -- one serving as the female parent and the other, as male parent. Also called an F₁, a hybrid variety exhibits better performance than its parents. Seeds harvested from the F₁ hybrid are not recommended for planting in the following season owing to expected reduction in the quality and quantity of the yield. Examples of hybrid varieties are PSB Rc26H (Magat), PSB Rc72H (Mestizo), and PSB Rc76H (Panay).
How long does it take to breed a new rice variety?

Through the conventional breeding process, it normally takes 7 to 8 years to develop a variety — 1 year to select from segregating generations and 3 years thereafter to generate uniform lines and start the preliminary yield trials. After 1 year, the lines are advanced to multilocation testing or national cooperative testing, which takes 2 years. Once the line passes standard yield, resistance, and grain and eating quality parameters, it is recommended and released as a new variety.

This does not mean, however, that the variety becomes immediately available to consumers after it has been produced. PhilRice and designated members of the National Rice Seed Production Network (SeedNet) must multiply these seeds until they reach the seed growers and, eventually, the farmers. This may take 1 or 2 years, depending on the availability of accredited seed growers in the area, and 6 months more before the milled rice becomes commercially available to consumers.

What are the criteria for breeding a rice variety?

The criteria currently being used are the following: high yielding, resistant to major pests and diseases, and excellent grain and eating quality. Specific traits are required in fragile environments (e.g., cold tolerance for cool-elevated areas, salt-tolerance for saline-prone areas, and drought tolerance for upland and rainfed areas).

Why do we keep on breeding and releasing new varieties?

a) To keep pace with our ever-changing agro-environment. Our soil nutrient status now differs from that a decade ago, even the group of insects and pathogens. The Philippines is a tropical country where insect pests abound. These pests may become more powerful, even faster than a breeder can develop a new variety. If we have only few varieties and these are not genetically diverse, so that they have similar reaction to a certain pest, all these varieties will be easily wiped out once an outbreak of this pest occurs.
Rice: From breeders to consumers

YEAR

0  CROSSING

1  SELECTION IN SEGREGATING GENERATIONS

4  GENERATION OF UNIFORM LINES/PRELIMINARY YIELD TRIALS

5-6  MULTILOCATION YIELD TESTING (National Cooperative Testing)

7-8  RECOMMENDATION & RELEASE

8-9  SEED PRODUCTION/SEED GROWER

9-10  FARMER/CONSUMER
b) To meet the changing and varied needs of consumers and farmers. Many Filipinos prefer rice varieties that are soft when cooked but some ethnic groups prefer otherwise. Farmers continually seek for higher yielding varieties owing to the demand of an increasing population.

c) To cope with the varied agroecological conditions of our archipelagic country. We also have varieties for adverse ecosystems such as saline-prone and cool-elevated areas.

d) To introduce higher yielding varieties or replace varieties that have deteriorated in yield and resistance. Several lines have been identified and were released recently to replace the consumer-preferred IR64 rice variety which has succumbed to the tungro virus.

How are varieties named?

Before, Philippine rice varieties were coded based on the institution or breeding center that developed them. For example, IR64 is from the International Rice Research Institute (IRRI); BPI Ri10 is from the Bureau of Plant Industry (BPI) and UPL Ri7 is from the University of the Philippines Los Baños (UPLB).

Starting 1990, the rice varieties were coded PSB Rc in honor of the Filipino rice research and development workers who test, multiply, and spread the varieties and as a seal of quality, having passed rigorous nationwide trials. PSB stands for Philippine Seed Board, while Rc stands for rice. An even number after the code means the variety is suited for lowland areas. An odd number means it is best for upland areas. Names of rivers or lakes are given as popular names for lowland varieties and names of mountains for upland rices. In some cases, names given by farmers, such as Burdagol, are adopted.

In summary:

Irrigated lowland - even number, rivers (e.g., PSB Rc10, Pagsanjan)
Upland - odd number, mountains (e.g., PSB Rc1, Makiling)
Who approves the release of a new rice variety?

The National Seed Industry Council (NSIC), formerly known as the Philippine Seed Board (PSB). The NSIC is chaired by the Secretary of the Department of Agriculture. It has an approving committee composed of the heads of the following agencies: BPI; UPLB; Institute of Plant Breeding, UPLB; Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD); Philippine Seed Industry Association; PhilRice; and two representatives from farmers organizations.

Within the NSIC is a technical secretariat that recommends candidate varieties to the council. It is composed of heads of technical working groups for different crops and headed by the Director of BPI.

What are the differences between traditional and modern rice varieties?

Traditional rice varieties are mostly tall (160-200 cm) with droopy leaves; photoperiodic, meaning their growth duration varies depending on the month they are planted; low yielding; late maturing; and less responsive to nitrogen fertilizers. These varieties have been bred through time to gain dependable yields under low management levels. These are good sources of resistance and grain quality traits. These varieties also endure adverse environments such as submerged regions and in areas with low soil fertility.

Most modern rice varieties (MRVs) are short (90-100 cm) and have thick and sturdy stems, high tillering capacity, and short erect leaves that allow the penetration of sunlight thereby improving photosynthetic activity. These varieties are high yielding, nonphotoperiodic, and responsive to high rates of fertilizers. However, they have narrow genetic diversity and require high production input compared with traditional varieties.
Is it possible to breed MRVs that need less or do not need fertilizer at all?

Yes. However, even without fertilizer, MRVs still yield higher than traditional varieties. Modern varieties are more efficient in absorbing nutrients and more effective in photosynthetic activities owing to plant architecture such as short upright leaves and more tillers.

Are traditional varieties being discarded in favor of MRVs?

No. The traditional varieties are being collected, evaluated, documented, and stored in the genebank for use of researchers and plant breeders. Good traits of traditional varieties, such as pest resistance and good eating quality, are being incorporated in the development of new modern varieties.

Some traditional varieties are being put back into commercial cultivation in the adverse environments such as PSB Rc16, PSB Rc36, PSB Rc38, and PSB Rc40 for the rainfed lowland areas and PSB Rc3 for the upland areas. These traditional rice varieties are drought-tolerant and need less fertilizer, making it favorable on the part of marginal farmers.

Other traditional varieties are also being improved so that they become shorter and nonphotoperiodic. The improved varieties are released as high yielding and good quality rices (e.g. PSB Rc78, the mutant Sigadis Milagrosa).

Is it true that the MRVs brought forth the various pests and diseases?

No. Many MRVs are tolerant or resistant to biotic (e.g. pests, diseases) and abiotic (e.g. salinity, drought) stresses.

Pests and diseases are brought about by ecological imbalances (pest-predator relationship). Lowering of rice plants resistance may be due to intensive cropping or use of the same variety every season.
Why do we need to regularly change the variety we are using?

To minimize the buildup of pests or to break the conditioning process of pests on the resistance of a particular variety. If pests are continuously exposed to the same variety, these might evolve into more powerful types that would overcome the resistance of the varieties.

Why is IR64 a popular variety?

IR64 has an excellent eating quality and high milling recovery (69%). Because of this, millers and traders buy IR64 from farmers at a relatively higher price than ordinary varieties. Hence, farmers plant this variety extensively. Because of this demand, IR64 is used as a standard variety in grain quality evaluation. It is also being used as basis to improve other varieties.

Is it true that newly released varieties always yield higher than older ones?

Not necessarily. A new variety may be released even if it yields lower than its precedent, as long as it has any of the following characteristics: resistance to major pests and diseases; good grain quality; higher yield than the check variety; grain quality comparable to IR 64; or a special attribute such as cold or drought tolerance. For instance, PSB Rc54 averages 5.0 t/ha while its precedent, PSB Rc52 averages 5.3 t/ha. But PSB Rc54 is more resistant to blast than PSB Rc52. In this case, blast resistance is considered a special attribute.
What factors contribute to the yield of a variety?

Yield is determined by the genetic makeup of a variety, its environment, production management, and/or the interaction of these factors. The genetic potential of a variety may not be expressed if the optimum environmental conditions are not met such as soil, water, and climate conditions. This is the reason why a certain variety may show varied performance at different locations.

Why are yields in experiment stations higher than those in farmers’ fields?

In the experiment stations, the optimum environmental conditions and management options, such as providing the right amount of fertilizers at the right time are maintained. With these, varieties can fully express their yield potential unlike in farmers’ fields where irrigation or fertilizer may be limited.

How should I choose the variety to plant?

Choose the variety that is best adapted to your local area, whether irrigated, rainfed, drought- or saline-prone; and resistant to pests, especially to those prevalent in the area. This information can be obtained from the municipal agricultural officers (MAO), seed growers, and some farmers in your area. Varieties have different reactions to insect pests and diseases and to specific environments. For example, PSB Rc44 and PSB Rc46 were specifically bred for low temperature areas such as in the highlands of the Cordillera Administrative Region (CAR).
What varieties are:

*tungro-resistant?*

Technically, there are really no tungro-resistant varieties, only tolerant ones such as PSB Rc10, PSB Rc18, and IR 74.

We also have ‘stopgap’ varieties such as the *Matatag* lines 1-8, which are resistant to tungro but can be planted only to break the infestation. It can be planted for several seasons, but if possible, not beyond five times. Once the disease pressure in the area weakens, it is advisable to change to another variety to avoid their breakdown.

*resistant to stem borers?*

There are no varieties resistant to stem borers. PSB Rc1, PSB Rc48, and PSB Rc50, however, are less preferred by stem borers.

*lodging-resistant?*

IR8, PSB Rc2, PSB Rc30, PSB Rc34, and PSB Rc74.

*drought-tolerant?*

All varieties for rainfed and upland areas have some degrees of drought tolerance. Some of these varieties are PSB Rc1, PSB Rc14, PSB Rc16, PSB Rc36, PSB Rc38, PSB Rc40, and PSB Rc42.

*early maturing?*

Varieties that are considered early maturing are those that mature in a maximum of 115 days. These varieties include IR36, IR60, BPI Ri10, IR66, PSB Rc4, PSB Rc8, PSB Rc10, PSB Rc12, PSB Rc14, PSB Rc26H, PSB Rc76H, and PSB Rc82.

*nonshattering?*

None of the varieties grown in the Philippines is nonshattering.

What varieties have:

*good eating quality?*

Varieties that are considered having good eating quality have soft grains when cooked and are usually aromatic. Examples are IR64, PSB Rc1, PSB Rc14, PSB Rc28, PSB Rc32, PSB Rc34, PSB Rc58, PSB Rc72H, PSB Rc80, and PSB Rc82.
low need for fertilizer?
Reselected traditional varieties such as PSB Rc16, PSB Rc36, PSB Rc38, and PSB Rc40 have low need for fertilizers but also have lower yields compared with modern varieties. Unlike modern varieties, traditional varieties are not efficient in converting fertilizers into usable forms.

What varieties are suited for:

dry season?
All PSB Rc varieties are suited for dry season.

wet season?
PSB Rc22, but most PSB Rc varieties are also suitable for wet season.

acidic soils?
PSB Rc1

saline-affected soils?
PSB Rc48, PSB Rc50, PSB Rc84, PSB Rc86, PSB Rc88, and PSB Rc90

Why release varieties that are susceptible to pests and diseases?
A susceptible variety (e.g., PSB Rc14) may be recommended if it has a special attribute such as high yield and excellent grain quality as compared with the standard checks. It is also possible that the variety has intermediate or resistant reaction at the time it was recommended but in time, it has succumbed to more powerful types of pests (e.g., IR 64).

How does a variety become resistant?
Resistance to insect pests in a variety is expressed in three forms: nonpreference, tolerance, and antibiosis. Nonpreference is the partiality of an insect to a variety; tolerance refers to the ability of the variety to recover from or to not totally succumb to pest attack; and antibiosis is the presence of a chemical substance in the variety that affects the life cycle of or kill the insect. Most of our rice varieties play on preference and tolerance.
What causes variety deterioration (nonuniformity) after 2 to 3 cropping seasons?

Impurity of the seed source is the main cause of deterioration. Use high quality seeds and buy them from accredited seed growers or reliable sources. Remove off-types every season in case the same seed sources will be used in the next cropping.

What are the differences among breeder, foundation, registered, and certified seeds?

Breeder seeds (BS) are produced by breeding institutions such as IRRI, UPLB, and PhilRice. These seeds are obtained from uniform panicles that are selected by plant breeders in the field and in the laboratory. These are certified 100% pure by the National Seed Quality Control Services (NSQCS). These are distributed to PhilRice branch stations and some selected members of the R&D network and SeedNet for further multiplication.

The foundation seeds (FS) are produced from the BS by PhilRice branch stations and some selected members of the R&D network and SeedNet. These are certified 98% pure by the NSQCS. These carry a red tag and are distributed to all members of the SeedNet and selected seed growers in every province for further multiplication.
The registered seeds (RS) are produced from FS by SeedNet members and selected seed growers. These carry a green tag and are distributed to all accredited seed producers for mass production.

The certified seeds (CS) are produced from the RS by all accredited seed growers. These carry a blue tag and are available to farmers for commercial production.

**Why is it that only seed growers can avail themselves of foundation and registered seeds?**

The purity of foundation and registered seeds is very high and the seed growers who produce them are trained to maintain the quality of the seeds. Since farmers produce rice mainly for commercial/consumption purposes, they are allowed to plant CS.

**Why do we need to use CS?**

CS are high quality seeds produced by trained seed growers. These seeds have high seedling vigor, meaning, they have a good survival rate and root anchorage, which leads to a higher yield advantage. With proper production management, CS can increase yield by at least 10%. CS also have a high germination rate.

**How come I get to buy CS with off-types?**

Certified seeds have a maximum allowable number of “unlike” grains (grains from other varieties) of 40 per 1/2 kg seed sample. Therefore, in 1 cavan of seeds (40 kg), there can be a maximum of 3,200 unlike grains.

**How many seasons can I use CS?**

It is advisable to buy certified seeds every season but it is still safe to use it for 2 consecutive seasons provided these are properly rogued.
**What is being done by the government to increase CS usage?**

The government, through the DA-Rice Seed System Action Program, procures seeds that will be distributed to farmers. Under the system, PhilRice produces foundation and registered seeds for seed growers through the SeedNet. The CS produced by the seed growers are bought by DA through the National Food Authority (NFA) centers. The seeds procured by NFA are then distributed to local farmers through the assistance of the provincial and municipal government units.

At PhilRice, farmer-visitors are given 1 kg seeds each for multiplication in their own fields. They are encouraged to share their produce to other farmers.

**Are there enough high quality seeds that farmers can use?**

Yes. There are more than 3,500 seed growers all over the country who produce CS for local farmers.

In addition, the SeedNet facilitates the production of foundation and registered seeds in all regions of the country to make sure that seed growers have enough supply of these seeds to produce CS. Currently, there are 115 SeedNet members representing all regions of the country, but only 95 are considered active members. These members are state colleges and universities, DA-RIARCS, cooperatives/associations, NGOs, provincial LGUs, and PhilRice stations.

Some seed growers, however, cannot wait until the next season which is the time when farmers start buying CS for planting. After harvest, seed growers sell the CS as ordinary rice to traders and millers because of an urgent need for money. By the time farmers are ready to buy CS, the seed growers would have already sold a substantial portion of their CS. Because of this, farmers complain that there is not enough CS in the market. On the other hand, seed growers complain that farmers come late in buying CS and not after harvest when they are in need of money.
How can I produce high quality seeds without spending so much?

Determine the area needed to produce the seed requirement. It must be fertile and situated near a water source. Prepare the area thoroughly to incorporate all rice stubbles. Allow drop seeds to grow and eliminate these to avoid mixtures. Buy about 1 kg high quality seeds (foundation, registered, or certified) from PhilRice or from any accredited seed grower. Mix organic matter on top of the seedbed (approximately 0.5 kg/sqm) to make pulling of seedlings easier. Remove off-types or any mixture including weeds and diseased plants in all growth stages. After 21-25 days, transplant 1-3 seedlings per hill in a 1,000 sq m field at 20 cm x 20 cm distance during the wet season and at 20 cm x 15 cm distance during the dry season.

Thresh, dry, and clean the seeds and avoid all sources of mechanical mixtures. Storage area must be clean, dry, and safe from birds, rats, and other pests. Do the above steps every cropping season.

How can one become an accredited seed grower?

First, the following initial requirements for accreditation must be met: 1) at least 1-ha rice area with irrigation; 2) drying facilities; 3) warehouse; 4) blower; and 5) a certificate of rice production training administered by the Agricultural Training Institute (ATI). If the applicant has not been trained, he must apply at the LGU that will coordinate the training with ATI.

The following steps summarize the accreditation process:

1. Submission of a letter of application, together with the certificate of training, to the Municipal Seed Inspector, who will visit and evaluate the rice area.
2. Certification by the Provincial Seed Coordinator to the NSQCS that applicant has passed all the requirements.
3. Approval of NSQCS.
4. Approval of the DA Regional Executive Director.
5. Processing of the certificate of accreditation.
Does the SeedNet compete with accredited seed growers?

No. The SeedNet produces the foundation and registered seeds which accredited seed growers buy to produce the certified seeds they sell to farmers. In other words, they have different markets—the SeedNet produces seeds for the seed growers while the seed growers produce seeds for the farmers.

Are hybrid seeds already available in the market?

Yes. However, the quantity produced is not yet enough to cater to the demand. Currently, PhilRice has cooperators, mostly in Regions 2 and 11, who produce seeds. But most of these are procured by PhilRice for planting by seed growers and farmers on a ‘50:50’ scheme, where 50% of the cost is subsidized by DA and the remaining amount is paid in cash by farmers.

This is in connection with DA’s target for 2004, which is to have 50% of irrigated areas planted to hybrid rice. This effort is complemented by collaborations among the private sector, government agencies, and private seed growers. Starting in the wet season of 2001, enough supply of hybrid seeds is expected to be in the market.

Why can’t farmers replant hybrid seeds?

Hybrid vigor is lost if hybrid seeds are replanted or used again as seeds. This results in a nonuniform or an “up and down” crop stand and in 20% yield reduction.

Where can I buy RS and CS?

Seed growers can buy RS from SeedNet members (see list on next page). Farmers can buy certified seeds from accredited seed growers and seed companies. Currently, there are more than 3,500 seed growers all over the country.
### SeedNet Members

#### Region 1
1. DA-Ilocos Integrated Agricultural Research Center-Research Outreach Station I, Dingras, Ilocos Norte
2. DA-ILIARC-ROS II, Batac, Ilocos Norte
3. DA-ILIARC-ROS III, San Ildefonso, Ilocos Sur
4. Don Mariano Marcos Memorial State University, Bacnotan, La Union
5. Ilocos Sur State Polytechnic College, Sta. Maria, Ilocos Sur
6. Mariano Marcos State University, Batac, Ilocos Norte
7. Pangasinan State University, Sta. Maria, Pangasinan

#### Region 2
8. Bienvenido Roque, Santiago City, Isabela
9. BM Domingo Seed Co., Rizalina, Aurora, Isabela
10. DA-Cagayan Valley Lowland Marine ROS, Maguire, Lucban, Abulug, Cagayan
11. DA-CVIARC, San Felipe, Ilagan, Isabela
12. Isabela Seed Growers MPCI, National Highway, Cauayan, Isabela
13. Isabela State University, Echague, Isabela
14. PhilRice San Mateo, Malasín, San Mateo, Isabela
15. Quirino State College, Diffun, Quirino

#### Region 3
16. Ben Cruz (Sanduguan), Baliuag, Bulacan
17. Central Luzon State University, Science City of Muñoz, Nueva Ecija
18. DA-Central Luzon Integrated Agricultural Research Center, Tarlac City, Tarlac
19. Ernesto Romero, Talavera, Nueva Ecija
20. Leonardo Quinto, Gapan, Nueva Ecija
21. Lorenzo Duqueza, Maligaya, Muñoz, Nueva Ecija
22. Pampanga Agricultural College, Magalang, Pampanga
23. Tarlac College of Agriculture, Camiling, Tarlac

#### Region 4
24. DA, San Jose, Occidental Mindoro
25. DA-Agricultural Demonstration Center, Barcenaga, Naujan, Oriental Mindoro
26. DA-OPAG, Puerto Princesa, Palawan
27. National Seed Foundation, Institute of Plant Breeding-UP Los Baños, College, Laguna
28. Laguna State Polytechnic College, Siniloan, Laguna
29. Occidental Mindoro National Agro-Forestry Center, Labangan, San Jose, Occ. Mindoro
30. Romblon State College, Odiongan, Romblon
31. SeedGrower Cooperative of Laguna, Callos, Sta. Cruz, Laguna
32. Southern Luzon Polytechnic State College, Lucban, Quezon
33. State Polytechnic College of Palawan, Aborlan, Palawan
34. SUSI Foundation, Inc., Tiaong, Quezon

#### Region 5
35. Bicol Institute of Development Technology, Pili, Camarines Sur
36. Bicol University-College of Agriculture and Forestry, Guinobatan, Albay
37. Camarines Norte State College, Daet, Camarines Norte
38. Catanduanes Agricultural and Industrial College, Panganiban, Catanduanes
39. DA-Bicol Integrated Agricultural Research Center, Pili, Camarines Sur
40. DA-OPAG Albay, Tula-tula Grande, Ligao, Albay
Q&A on Varieties and Seeds

41. Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology, 
Mandaon, Masbate
42. Pinit Irrigator’s Association Inc., Ocampo, Camarines Sur

Region 6
43. Aklan Provincial Seed Production Center, Capitol Site, Kalibo, Aklan
44. Aklan State College of Agriculture, Banga, Aklan
45. Aklan Seed Grower MPCI, Numacia, Kalibo Aklan
46. Central Philippine University, Jaro, Iloilo City
47. DA-Bureau of Plant Industry La Granja Research Center, La Carlota City, Negros Occidental
48. DA-Western Visayas Integrated Agricultural Research Center, Hamungaya, Jaro, Iloilo City
49. Iloilo Integrated Seed Growers Multipurpose Cooperative, Inc., La Paz, Iloilo City
50. KASAMA-N.N. Inc., Kabankalan City, Negros Occidental
51. L.N. Agustin Farms, Hiningiran, Murcia & La Castellana, Negros Occidental
52. OPAG-Seed Grower Antique, San Jose, Antique
53. Panay State Polytechnic College, Pontevedra, Capiz
54. Pototan Seed Growers’ Association, Pototan, Iloilo

Region 7
55. Silliman University, Dumaguete City
56. DA-BES-Central Visayas Integrated Agricultural Research Center, Gabi, Ubay, Bohol
57. DA-BES-Soil, Water Resource and Development Station, Calanggaman, Ubay, Bohol
58. A.T. Farm (Mr. Restituto Tan Farm), Ubay, Bohol
59. Gaudioso R. Luardo, Sagbayan, Bohol
60. Francisca Oclarit, Poblacion, Alicia, Bohol
61. Bohol APC, Dao District, Tagbilaran City, Bohol
62. Argao Seed Producers Association, Argao, Cebu
63. Office of the Provincial Agriculturist, Siquijor, Siquijor
64. Nonato C. Jinon, Panubigan, Canlaon City, Negros Oriental
65. Seed Growers Association of Negros Oriental, Dumaguete City

Region 8
66. Biliran Samar State College, Borongan, Eastern Samar
67. DA-Eastern Visayas Integrated Agricultural Research Center-ROS, Babatngon, Leyte
68. DA-EVIARC-ROS, Irawahan, Catubig, Northern Samar
69. DA-RIARC, Balinsasayao, Abuyog, Leyte
70. DA-RIARC San Jorge, San Jorge, Western Samar
71. Eastern Samar State College, Borongan, Eastern Samar
72. Las Navas Agro-Industrial School, Las Navas, Northern Samar
73. University of Eastern Philippines, Catarman, Northern Samar
74. Visayas State College of Agriculture, Baybay, Leyte

Region 9
75. DA-Western Mindanao Integ. Agric’l Research Center, Sanito, Ipil, Zamboanga del Sur
76. DA-WESMIARC-ROS for Upland/Lowland Rice, Betinan, San Miguel, Zamboanga del Sur
77. Zamboanga del Sur Agricultural College, Dumingag, Zamboanga del Sur
78. Sindangan National Agricultural School, Sindangan, Zamboanga del Norte
79. Katipunan National Agricultural School, Katipunan, Zamboanga del Norte
SEEDNET Members... (continued)

Region 10
80. Bukidnon Agriculture and Fishery Complex, Dangcagan, Bukidnon
81. Bukidnon Resources Co., Inc., Cagayan de Oro City
82. CENBUCO, Valencia, Bukidnon
83. Central Mindanao University, Musuan, Bukidnon
84. Misamis Oriental State College of Agriculture and Technology, Claveria, Misamis Oriental
85. Kisolon Seed Farm, Sumilao, Bukidnon

Region 11
86. DA-Southern Mindanao Integrated Agric’l. Research Center-ROS, Tupi, South Cotabato
87. DAMSEPCO, Tagum City, Davao del Norte
88. DASUCEPCO, Digos, Davao del Sur
89. DOSEPCO, Banay-banay, Davao Oriental
90. LISIDECO, Bagumbayan, Lupon, Davao Oriental
91. PAGRO-Comval, Nabunturan, Comval Province
92. Surallah National Agricultural School, Sunas, Surallah, South Cotabato
93. Tinguha Foundation, Inc., Koronadal, South Cotabato
94. University of Southeastern Philippines, Tagum City, Davao del Norte
95. Saranggani Seed Growers’ Cooperative, Alabel, Saranggani
96. Binhian ng Timog Cotabato MPC, Marbel, South Cotabato

Region 12
97. Cotabato Integrated Seed Production and Marketing Corp., Kilada, Matalam, Cotabato
98. DA-Central Mindanao Integrated Agric’l. Research Center-ROS, Tacurong, Sultan Kudarat
99. PhilRice Midsayap, Bual Norte, Midsayap, North Cotabato
100. Provincial Nursery Seed Farm, Kapatagan, Lanao del Norte
101. Sultan Kudarat State Polytechnic College, Tacurong, Sultan Kudarat
102. University of Southern Mindanao, Kabacan, North Cotabato

CARAGA
103. PhilRice Agusan, Basilisa, RTR, Agusan del Norte
104. DA-Northern Mindanao Integrated Agricultural Research Center-ROS, Del Monte, Talacogon, Agusan del Sur
105. Northern Mindanao State Institute of Science and Technology, Ampayon, Butuan City
106. Surigao Del Sur State Polytechnic College, Tarvia Campus, Gamut, Tago, Surigao del Sur
107. Surigao del Norte College of Agriculture and Technology, Mapayang, Mainit, Surigao del Norte

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108. DA-Autonomous Region in Muslim Mindanao, Jolo, Sulu
109. Mindanao State University, Marawi City, Lanao del Sur
110. MSU, Datu Odin Sinsuat, Maguindanao

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111. Abra State Institute of Sciences and Technology, Lagangilang, Abra
112. DA-Cordillera Administrative Region-ROS, Tumog, Luna, Apayao
113. Kalinga Agro-Production Center, Bulanao, Tabuk, Kalinga
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OTHER SOURCES

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The Philippine Rice Research Institute (PhilRice) is a government corporation attached to the Department of Agriculture (DA). Executive Order 1061 approved on November 5, 1985 and amended by EO 60 dated Nov. 7, 1986, created PhilRice to help develop high-yielding technologies so that farmers can produce enough rice for all Filipinos. PhilRice accomplishes this mission through research, technology promotion, and policy advocacy, which are implemented through a network that includes 57 agencies and 115 seed centers strategically located nationwide.

Its interdisciplinary programs include the following: (1) direct-seeded and (2) transplanted irrigated lowland rice; (3) hybrid rice; (4) rice for adverse environments; (5) rice-based farming systems; (6) rice and rice-based products; (7) policy research and advocacy; and (8) technology promotion. With these programs, PhilRice aims to develop and promote technologies that are ecosystem-based, location- and problem-specific, and profitable to the Filipino farmers.

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